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February 1972

**AIR POLLUTION AND URBAN PLANNING: A Selective
Annotated Bibliography**

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AIR POLLUTION AND URBAN PLANNING
A SELECTED ANNOTATED BIBLIOGRAPHY

By

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INTRODUCTION

Few planners are able, technically, to make meaningful evaluations of air pollution matters beyond those of a well-informed citizen. Frequently, proposals advanced by urban planning professionals reflect embarrassing gaps of knowledge pertaining to aspects of air pollution when critically evaluated by an expert in the field. Today, urban planners in general are becoming more involved in many areas of governmental and non-governmental activities. As part of their larger responsibilities, they should have some idea of the impact of their recommendations upon the quality of the air they breathe. The modern planner simply must have enough technical knowledge to relate the projects with which he is involved to their physical, social, economic, and environmental implications. The day of the "seat-of-the-pants" planner is no longer acceptable in our modern complex urban life. The day of the team approach with many expertise represented is now a requirement.

Design of Bibliography

This bibliography only skims the wealth of air pollution literature available today and attempts to cover broadly the relationship which exists between air pollution and urban planning. The sources selected relate to the many aspects of urban planning as it is practiced, or should be practiced, today as well as the general characteristics of air pollution with which the planner must be knowledgeable. Extremely technical literature, only of interest to trained experts involved in air pollution control, have not been included nor have pieces which contain only very general statements. Hopefully this bibliography will serve as a support reference upon which an urban and transportation planner may turn so as to learn the air quality implications of the possible alternative solutions to the problem he is studying. If he is directly involved in air quality management, his knowledge of the subject should go beyond most of the works contained in this bibliography.

In most cases the literature noted is post-1965. The reason for this is that Mr. William J. Pelle, Jr., formerly of the Northeastern Illinois Planning Commission and United States Public Health Service, developed an excellent bibliography in 1965 which noted the planning aspects involved in air pollution control.* Therefore, to cite pre-1965 sources would have been unduly repetitive of this earlier bibliography.

* William J. Pelle, Bibliography on the Planning Aspects of Air Pollution Control. Summary and Evaluation. December 18, 1964 (mimeo).

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no. 257-264

Use of Bibliography

The numerous air pollution and urban planning data sources cited in this bibliography have been grouped according to their general availability, i.e., a book store, the U. S. Government Printing Office, various local governments, professional journals, magazines, etc. An additional grouping included is a collection of citations of other bibliographies and periodicals dealing with the various aspects of air pollution and its management with which the urban planner may wish to consult. The grouping according to availability are:

<u>Group Number</u>	<u>Group Availability</u>
200	Books, Conference Proceedings, Articles from Books
200	Government Documents -- Federal
300	Government Documents -- Regional, State, Local, Foreign
400	Pamphlets
500	Professional Journal and Magazine Articles
600	Unpublished Materials -- Papers, Reports
700	Additional Reference Sources

To facilitate the use of this bibliography, a series of "Citation Content" tables arranged according to source availability follow which will enable one to identify those annotations which contain information relative to a particular aspect of the relation of air pollution to urban planning.

The air pollution categories contained in the table are:

Emission Sources -- Stationary

-- Mobile

Effects

Meteorology

Diffusion Modeling

Control -- Administration, Legal, Political

-- Criteria and Standards

-- Economic and Physical.

Each category in the "Citation Content" tables which follow is keyed to the various references, Federal documents, etc. in which it is discussed. Each cited document is given its own three digit number. This number is located in the "Citation Content" table on the extreme left-hand side of the page under the column heading "Document Number." The last digit of each document number is used as a reference across the page to note the particular aspect(s) of air pollution discussed in the reference. Each document included in the annotated bibliography which follows the "Citation Content" tables has its document number located directly above the author's name. The following examples should depict the operation of the table and clarify its use.

5. CPL Exchange Bibliography #257

<u>Number</u>	<u>Emission Sources</u>		<u>Effects</u>
	Stationary	Mobile	
101		1	
102	2	2	2
103	3		3

Example Citation Number 101 contains data relating to mobile emission sources.

Example Citation Number 102 contains data relating to both stationary and mobile emission sources and their effects.

Example Citation Number 103 contains data relating to stationary emission sources and their effects.

CITATION CONTENT

100 Books, Conference Proceedings, Articles from Books
(ASPECT OF AIR POLLUTION)

Document Number	Emission Sources		Effects		Diffu- sion Modeling	Control		
	Stat- ionary	Mobile	Economic, Health, Social, etc.	Meteor- ology (Includes Topography)		Admini- stration, Legal, Political	Criteria and Stand- ards	Economic and Physical
101	1	1		1		1		
102			2	2				2
103	3	3	3			3		
104		4		4	4			
105						5	5	
106							6	
107			7					
108	8	8	8			8	8	8
109			9	9				
110						0	0	0
111				1		1		
112			2	2				
113	3		3					
114							4	
115	5	5	5	5		5		5
116			6			6	6	
117			7					
118						3		8
119			9			9		9
120	9	0				0		0

Note: Numbers in air pollution aspect column correspond to last digit of citation number for that line.

CITATION CONTENT

100 Books, Conference Proceedings, Articles from Books
(ASPECT OF AIR POLLUTION)

Document Number	Emission Sources		Effects		Meteor- ology (Includes Topography)	Diffu- sion Modeling	Control	
	Stat- ionary	Mobile	Economic, Health, Social, Etc.	Economic, Health, Social, Etc.			Admini- stration, Legal, Political	Criteria and Stand- ards Economic and Physical
121							1	1
122	2	2	2		2		2	2
123							3	
124							4	4
125		5					5	5
126	6	6	6		6		6	6
127							7	7
128	3	8			8			
129								9

Note: Numbers in air pollution aspect columns correspond to last digit of citation number for that line.

CITATION CONTENT

200 Government Documents-Federal
(ASPECT OF AIR POLLUTION)

Document Number	<u>Emission Sources</u>		<u>Effects</u> Economic, Health, Social, Etc.	<u>Meteor</u> ology (Includes Topography)	<u>Diffu-</u> <u>sion</u> <u>Modeling</u>	<u>Control</u>	
	Stationary	Mobile				Admini- stration, Legal, Political	Criteria and Stand- ards Economic and Physical
201						1	
202	2			2	2	2	2
203			3				
204	4						4
205	5	5					
206	6						6
207	7						7
208	8	8					8
209	9	9					
210						0	0
211	1	1					
212	2				2		
213	3	3					
214				4			
215						5	
216						6	6
217	7	7				7	7
218	8	8			8	8	
219							9
220	0	0		0	0		

Note: Numbers in air pollution aspect columns correspond to last digit of citation number for that line.

CITATION CONTENT

200 Government Documents-Federal (ASPECT OF AIR POLLUTION)						
Document Number	<u>Emission Sources</u>	<u>Effects</u> Economic, Health, Social, etc.	<u>Meteor- ology</u> (Includes Topography)	<u>Diffu- sion</u> <u>Modeling</u>	Control	
					Admini- stration, Legal, Political	Criteria and Stand- ards and Physical
221	1					
222			2			
223			3			
224					4	4
225				5		5
226	6	6	6	6	6	6

Note: Numbers in air pollution aspect columns correspond to last digit of citation number for that line.

CITATION CONTENT

300 Government Documents - Regional, State, Local, Foreign (ASPECT OF AIR POLLUTION)									
Document Number	<u>Emission Sources</u>		<u>Effects</u>	<u>Meteor-</u>	<u>Diffu-</u> <u>sion</u> <u>Modeling</u>	<u>Control</u>			
	<u>Stat-</u> <u>ionary</u>	<u>Mobile</u>	<u>Economic,</u> <u>Health,</u> <u>Social,</u> <u>etc.</u>	<u>ology</u> <u>(Includes</u> <u>Topography)</u>		<u>Admini-</u> <u>stration,</u> <u>Legal,</u> <u>Political</u>	<u>Criteria</u> <u>and</u> <u>Stand-</u> <u>ards</u>	<u>Economic</u> <u>and</u> <u>Physical</u>	
301	1	1	1	1		1	1		
302	2	2		2		2	2		2
303	3	3	3			3	3		3
304	4	4				4	4		4
305	5		5						
306	6	6	6	6		6	6		6

Note: Numbers in air pollution aspect columns correspond to last digit of citation number for that line.

CITATION CONTENT

400 Pamphlets

(ASPECT OF AIR POLLUTION)

Document Number	Emission Sources		Effects Economic, Health, Social, etc.	Meteorology (Includes Topography)	Diffusion Modeling	Control	
	Stationary	Mobile				Administrative, Legal, Political	Criteria and Standards
401	1	1	1	1		1	
402	2	2					2
403	3	3	3				3
404		4	4			4	4

Note: Numbers in air pollution aspect columns correspond to last digit of citation number for that line.

CITATION CONTENT

500 Professional Journal and Magazine Articles
(ASPECT OF AIR POLLUTION)

Document Number	Emission Sources		Effects Economic, Health, Social etc.	Meteorology (Includes Topography)	Diffusion Modeling	Control		
	Stationary	Mobile				Administrative, Legal, Political	Criteria and Standards	Economic and Physical
501						1		
502						2		
503						3		
504						4		
505						5		
506	6	6						6
507				7		7		7
508	8	8				8		8
509	9							9
510		0						0
511				1				1
512	2	2	2	2		2	2	
513	3							3
514		4						
515			5			5	5	5
516	6	6			6			6
517		7						
518				8				8
519	9					9		9
520	0							0

Note: Numbers in air pollution aspect columns correspond to last digit of citation number for that line.

CITATION CONTENT

500 Professional Journal and Magazine Articles
(ASPECT OF AIR POLLUTION)

Document Number	Emission Sources		Effects Economic, Health, Social, etc.	Meteor- ology (Includes Topography)	Diffu- sion Modeling	Control	
	Stat- ionary	Mobile				Admini- stration, Legal, Political	Criteria and Stand- ards and Physical
521						1	1
522						2	
523				3			
524			4		4		5
525							6
526		7					7
527		8			8		
528	8	9		9		9	9
529							
530			0				
531				1			2
532	2	2	2				3
533							4
534			4	4		4	5
535						5	

Note: Numbers in air pollution aspect columns correspond to last digit of citation number for that line.

CITATION CONTENT

500 Professional Journal and Magazine Articles (ASPECT OF AIR POLLUTION)							
Document Number	<u>Emission Sources</u>		<u>Effects</u> Economic, Health, Social, etc.	<u>Meteor- ology</u> (Includes Topography)	<u>Diffu- sion</u> <u>Modeling</u>	<u>Control</u> Admini- stration, and Legal, Political Stand- ards	Economic and Physical
	Stat- ionary	Mobile					
536	6	6		6		6	6
537		7					7
538		8	8				9
539							
540	0	0	0			0	0
541							1
542							2
543	3		3				
544	4			4	4		4

Note: Numbers in air pollution aspect columns correspond to last digit of citation number for that line.

CITATION CONTENT

600 Unpublished Materials - Papers, Reports
(ASPECT OF AIR POLLUTION)

Document Number	Emission Sources		Effects Economic, Health, Social, etc.	Meteor- ology (Includes Topography)	Diffu- sion Modeling	Control		
	Stat- ionary	Mobile				Admini- stration, Legal, Political	Criteria Stand- ards	Economic and Physical
601	1	1						2
602		2						3
603								4
604						4		
605			5		5	5	5	
606	6				6			6
607	7							7
608	8							8
609					9			9
610						0	0	0
611					1			
612	2							2
613		3		3				
614					4			
615								5
616						6	6	6
617	7	7	7	7		7	7	7
618		8			8			
619		9			9			
620			0	0		0		

Note: Numbers in air pollution aspect columns correspond to last digit of citation number for that line.

CITATION CONTENT

600 Unpublished Materials - Papers, Reports
(ASPECT OF AIR POLLUTION)

Document Number	<u>Emission Sources</u>		<u>Effects</u> Economic, Health, Social, etc.	<u>Meteor-</u> <u>ology</u> (Includes Topography)	<u>Diffu-</u> <u>sion</u> <u>Modeling</u>	<u>Control</u>		
	Stat- ionary	Mobile				Admini- stration, Legal, Political	Criteria and Stand- ards	Economic and Physical
621		1						
622	2	2				2	2	
623	3	3					3	
624						4	4	
625								5
626				6				
627		7	7					7
628	8	8						
629			9					
630			0					
631				1		1		1
632			2					
633					3			3
634	4				4	4	4	
635	5			5				
636			6					
637	7	7	7	7	7	7	7	7
638					8			
639	9							
640					0			

Note: Numbers in air pollution aspect columns correspond to last digit of citation number for that line.

100 Books, Conference Proceedings, Articles from Books

101

American Association for the Advancement of Science. Air Conservation, Publication No. 80. Washington, D.C.: American Association for the Advancement of Science, 1965.

This book was divided into three parts. Part I concerns itself with and is so titled "Air Conservation and Public Policy." Part II, "Summary of the Facts," reviews what air pollution is, what the pollutants are, how they are transported, how they can be controlled, and what their effects are. The third section, Part III, "Background Papers," reviews in more detail many of the items contained in Part II. Two of the papers in Part III specifically deal with and are entitled the "Socio-Economic Factors" of air pollution and "Air Pollution and Urban Development." A general work, now somewhat out of date.

102

American Chemical Society. Cleaning Our Environment: The Chemical Basis For Action. Washington, D.C.: American Chemical Society, 1969.

Along with discussions of water pollution, solid wastes and pesticides, 72 pages are devoted to a readable discussion of control processes involved in air pollution. Many recommendations and an extensive technical bibliography. This paperback is highly recommended.

103

Ayres, Robert V. "Air Pollution in Cities," Politics and Environment, ed. Walt Anderson. California: Goodyear Publishing Company, Inc., 1970.

A good overall picture of the problem of air pollution in the modern society of today. Just that, nothing more.

104

Bright, Cooper, et al. Comparison of Air Pollution From Aircraft and Automobiles. (New Brunswick, New Jersey: Rutgers-The State University, 1970.) Springfield, Virginia: National Technical Information Service, No. AD 719 913.

An examination of the environmental aspects of establishing an urban air transportation system for the tri-state area of Connecticut, New Jersey, and New York for daily commuting. It purports that the level of air pollution created by automobile engine emissions can be drastically reduced by providing urban air transportation for those daily commuters who now travel to Manhattan by automobile but who would prefer journey to work by aircraft. These results are indicated when Short Take Off and Landing air transportation is substituted for automobile in commuting daily between Manhattan and eleven satellite transportation centers. The study further finds that air pollution at a STOLport in Manhattan supporting such a system would be less than the normal background concentrations even during peak travel period. Problems of noise and reliability are not resolved in the study.

105

Davies, J. Clarence, III. The Politics of Pollution. New York: Pegasus, 1970.

An illustration of the twisting and rocky road over which any pollution control or abatement legislation must successfully pass. The presentation is divided into three sections. In Part I -- The Pollution Challenge and the Legislative Response -- the history of air pollution legislation prior to 1955 in the United States is reviewed, meteorological factors affecting atmospheric pollution presented, and Federal legislation from 1955-1967 is capsulized. Part II -- The Policy-makers -- recounts the history of air pollution control bureaucracies within the Federal Government, notes the state and local governments' responsibilities and the problems the local governments face in attempting to overcome air pollution. Part III -- The Policy Process -- deals with the attempt by HEW to establish criteria and standards for air pollution measurement and legislation and some of the resultant repercussions from the attempt. The enforcement of Federal air pollution regulations is discussed and general recommendation of goals and policies for the future are presented. The book is widely quoted.

106

DeChiara, Joseph and Lee Koppelman. Planning Design Criteria. New York: Van Nostrand Reinhold Company, 1969.

In this general planning design book the authors have included California standards for ambient air quality and U. S. Public Health Service odor classification information and an air pollution emission table.

107

Ehrlich, Paul R., and Anne H. Ehrlich. Population, Resources, Environment: Issues in Human Ecology. San Francisco, California: W. H. Freeman and Company, 1970.

The Ehrlich's discussed the problem of air pollution in man's urban societies as it relates to chronic health effects, plant damage, and other hazards both at the present and into the future. Provocative, but poorly documented. A somewhat one-sided presentation.

108

Esposito, John C. Vanishing Air. New York: Grossman Publishers, 1970.

A review of the major problems of controlling air pollution in the United States today. It recounts how many larger corporate polluters fight local air pollution control while nationally advertising themselves as concerned citizens trying to stop air pollution. The National Air Pollution Control Administration is critically evaluated for its effectiveness, and the role of politics played in air pollution control is shown. Legal solutions are emphasized. A popular book.

109

Gates, David M. "Relationship Between Plants and Atmosphere," Challenge for Survival: Land, Air, and Water for Man in Megalopolis, (ed.) Pierre Dansereau. New York: Columbia University Press, 1970.

The evolution of plant life and the atmosphere up to the present is explained. Then the complicated interrelationships among carbon dioxide, water vapor, atmospheric aerosols, wind, temperature, and plant life is summarized. Finally, the author calls for a crash research program, termed "surface ecology," which will enable us to understand what effects urban development such as paving one per cent of the United States with roads means, or the long term photochemical effects of air pollutions, or the effects on trees and shrubs of dust from a city settling on their surfaces.

110

Hagevik, George H. Decision-Making in Air Pollution Control; A Review of Theory and Practice, With Emphasis on Selected Los Angeles and New York City Management Experiences. New York: Praeger Publishers, 1970.

The author discusses the general sources of air pollution today, the complicated aspects of its control, the economics involved, and the political and institutional arena in which the problem must be solved. The three approaches to control -- effluent fees, payments, and direct regulation -- are noted, and their advantages and disadvantages are recounted. Finally, air quality management decision strategies are reviewed, and the concept of bargaining is given major emphasis.

111

Herring, Frances W. "Bases for Urban Development: Air, Soil, Water," Planning, 1963. Chicago: American Society of Planning Officials, 1963.

A proposal that a new planning tool be developed, maps showing hourly airflow characteristics, wind speed, direction, etc., over specific areas and for entire air-sheds. These maps could be used for recommending the best location from an air flow stand-point for industrial areas, recreational areas, agricultural areas, residential areas, and even entire new towns.

112

Landsberg, Helmut E. "Metropolitan Air Layers and Pollution," Challenge for Survival: Land, Air, and Water for Man in Megalopolis, ed. Pierre Dansereau. New York: Columbia University Press, 1970.

A brief history of man's ability to pollute the air he breathes is recounted. Then, the pollutants' effect upon man, his civilization, and his ecology are explained. Finally, the overlapping of air pollution from one metropolitan region to another is used to show that the cleaning up of our atmosphere cannot be a local attempt but must be regional or national in scope.

113

Marsh, A. "Air Pollution," Technological Injury: The Effects of Technological Advances on Environment, Life and Society, ed. J. Rose. New York: Gordon and Breach Science Publishers, 1969.

This article was originally written for an English audience and thus pertains to air pollution in the United Kingdom. The technological injury to the atmosphere by air pollution is traced back some 700 years to the burning of coal in London for industrial purposes. In fact, the problem was so great that royal ordinances of 1273 and 1306 tried, unsuccessfully, to prohibit its use. The article's analysis of air pollution today focuses on injuries to man and plants and possible actions which can be taken against air pollution. The air pollution dealt with is mainly that of domestic smoke and industrial emissions.

114

Meshenberg, Michael J. Air Zoning: An Application of Air Resource Management. Planning Advisory Service Report No. 212. Chicago, Illinois: American Society of Planning Officials, July, 1966.

Air zoning is the air quality a political subdivision desires and is defined as the maximum level of air pollution it wishes to permit in a given area. This approach is based on an effective air resource management program with established air quality standards. The reports' appendices include an air resource management study methodology and ambient air quality objectives of the New York State Air Pollution Control Board. This report should be reviewed by planners about to undertake an air pollution study. An original effort now somewhat dated.

115

National Academy of Sciences-National Research Council. Waste Management and Control, Publication 1400. Washington, D.C.: National Academy of Sciences, 1966.

A highly recommended work. A management approach is outlined that does not deal with air pollution specifically. Major Topics covered include pollution processes in ecosystems, criteria, instrumentation and monitoring, the transport system, the residue situation, technology, and legal and institutional aspects. Now out of print but worth looking for.

116

National Association of Counties. Air Pollution Control: Community Action Guide for Public Officials. Washington, D.C.: National Association of Counties, n.d.

A series of eight short guides designed to present to the local officials the information needed to institute and strengthen community-wide programs to control air pollution. The eight guides are:

1. The Areawide Approach
2. Organization
3. Enabling Legislation
4. Enforcement
5. Staffing
6. Financial and Technical Assistance
7. Gaining Community Support
8. An Action Plan for Instituting Community Air Pollution Control Programs and Bibliography.

117

Paulson, Glenn L. "Human Behavior and Buildings Over Roads," Planning, 1970. Chicago, Illinois: American Society of Planning Officials, 1970.

The author explores the biological problem of air rights construction over urban freeways and notes that such construction "...is biologically unsound without carefully planning the placement and design of such buildings..." As an example, he states that carbon monoxide levels in the George Washington Bridge Apartments, which sit astride the Manhattan approach to the George Washington Bridge, average about the same as those on a busy street corner in New York City between 9:00 a.m. and 7:00 p.m. -- the difference being that these levels in the apartments are on a 24-hour-a-day basis and reach all the way up to the 30th floor.

118

Public Administration Service. Municipal Refuse Disposal. Chicago, Illinois: Public Administration Service, 1970.

The problem of air pollution generation by refuse incineration is reviewed as it relates to the local control ordinance, the smoke emission determination via the Ringelmann Chart, and physical methods of control.

119

Ridker, Ronald G. Economic Costs of Air Pollution: Studies in Measurement. New York: Frederick A. Praeger, Publishers, 1967.

"Economists," according to Mr. Ridker, "have long recognized the need for public regulation of economic activities that resulted in unwanted side effects." However, economists have not contributed very much meaningful data relating to air pollution. They have not answered questions confronting policy-makers, such as: "What level of pollution is socially acceptable? What should be done to achieve this standard? How can costs be allocated fairly to all those who contribute to air pollution? What institutional arrangements will ensure effective use of the limited answers we have for these questions?" To help answer these questions, three methods are proposed for determining the economic results of air pollution. Examples of each method are included.

In the first approach, cost curves showing total costs of pollution, total costs of control, and marginal costs are developed. This gives the policy-maker the total cost of pollution abatement as well as the costs for less than total abatement upon which to base his decisions.

The second cost measurement method requires that each specific pollutant within a specific air shed should have its own cost figures developed. This again enables the policy-maker to know the ramifications of his decisions.

The third approach is more of a rule in that the costs which are measured should be minimum costs. If this is not the case, then the costs required to achieve the standards adopted by the policy-makers will not be accurate.

The reasons for this type of analytical approach are that 1) it clarifies issues and therefore assists the policy-maker in his decisions on air pollution, 2) it fosters a better understanding of the data needed to make economic measurements, and 3) it enables the policy-maker to know whether a usefully large portion of consequences relating to an air pollution control proposal can be quantified or whether other approaches of proposal evaluation should be explored.

A thought provoking book.

120

Rockefeller, Nelson A. Our Environment Can Be Saved. New York: Doubleday and Company, Inc., 1970.

In 1964, New York State became the first state in the nation which zoned air according to its "best use." In 1966, the State's Clean Air Program offered tax incentives to industries which installed pollution control equipment. Examples illustrating the effectiveness of the State's pollution abatement legislation are also included.

121

Rockwell, Matthew L. "Air Resources and Planning," Planning, 1966. Chicago, Illinois: American Society of Planning Officials, 1966.

Mr. Rockwell was the Executive Director of the Northeastern Illinois Planning Commission, which undertook the first planning agency-directed study of a metropolitan air resources problem. He discusses why his agency undertook this study and how it was assisted by four other local, state, and Federal agencies and the contributions he feels planning can make to help alleviate the problem.

122

Rossano, A. T., Jr. (ed.). Air Pollution Control: Guidebook for Management. Stamford, Connecticut: Environmental Sciences Service Division, E.R.A., Inc., 1969.

The basic principles of air pollution control in such a manner that both technical and non-technical persons can gain a working knowledge of the subject. The general disciplines and their relationship to air pollution discussed are chemistry, engineering, meteorology, biology, law, and administration. Since many aspects of planning overlap these disciplines and because of the book's format as described above, this book is recommended for the planning office library.

123

Rutgers College of Agriculture and Environmental Science, and School of Law. Legal Aspects of Air Pollution. New Brunswick, New Jersey: Rutgers-The State University, 1967.

This special seminar proceedings contained papers dealing with the various problems of air pollution and the legal and administrative aspects of its control.

124

Salzenstein, Marvin A. Industrial Performance Standards. Planning Advisory Service Report No. 272. Chicago, Illinois: American Society of Planning Officials, September, 1971.

The purpose of performance standards in industrial zoning is to translate the classical light, medium and heavy industrial categories into well-defined, meaningful terms dealing with environmental effects. Performance standards relate to process, not products, to effects rather than arbitrary classification systems; they provide a more rational approach to the problems of classifying land uses for zoning. The environmental effects commonly controlled in zoning performance standards are noise, vibration, air pollution, radioactive conditions, glare, humidity, and fire and explosion hazards.

A brief discussion is presented on performance standards in the area Federal activity, designing of the standards, types of control, and limitations of them. In the field of air pollution performance standards, the various aspects of their use are discussed in terms of smoke, particulate matter, allowable emissions, and land use and density.

125

Steif, William. "Why the Birds Cough," The Crisis of Survival. New York: William Morrow & Company, 1970.

The role of the automobile and how it contributes to air pollution is explained. The pollutants which its internal combustion engine releases into the atmosphere and their reaction with sunlight to form secondary pollutant products called oxidants are discussed. The political and economic efforts, problems involved in legally requiring air pollution control devices on the auto, and possible alternatives to the internal combustion engine are briefly reviewed. As the title indicates, not too rigorous.

Stern, Arthur C. (ed.). Air Pollution, 3 vols. (2nd. ed.).
New York: Academic Press, 1968.

This three-volume basic reference work contains articles by many experts in various areas of the field of air pollution and its control. The purchase price is close to \$100! The three volumes are:

- I. Air Pollution and Its Effects - Deals with air pollution, air pollution meteorology, and effects of air pollution.
- II. Analysis, Monitoring and Surveying - discusses analyses of pollutants, air quality and meteorological monitoring, and source measurement and community survey.
- III. Sources of Air Pollution and Their Control - reviews sources of air pollution, control methods and equipment, and air pollution control.

127

Teller, Azriel. "Air Pollution Abatement: Economic Rationality and Reality," America's Changing Environment. Roger Revelle and Hans H. Landsberg (eds.). Boston, Massachusetts: Houghton Mifflin Company, 1970.

The cost of air pollution abatement rises as the level of abatement increases. Today, in most instances, the benefit to health between a device which removes 99 percent of the pollution and one that removes 99.9 percent of the pollution is not known. Yet some people demand the cleaner air even though it may cost 100 percent more for the extra .9 percent level of purity. Before establishing air quality standards or emission standards, the author suggests that some schedule be developed which compares the total damage to society cost plus total cost of control to the abatement level desired.

There are two basic methods of abatement. One involves the setting of a standard which if exceeded would be "harmful" to society. This involves the closing down of pollution sources during meteorological periods of high pollution probability. The second method calls for the reduction of single, high concentrations which reduces the long-run, high-average level of concentration. This is the approach favored by most air pollution control authorities. The choice, then, is between forecasting abatement and constant abatement.

128

Welson, John R., and Benjamin H. Stevens. Air Quality and Its Relationship to Economic, Meteorological and Other Structural Characteristics of Urban Areas in the United States. RSRI Discussion Paper Series: No. 42. Philadelphia, Pennsylvania: Regional Science Research Institute, 1970.

A simple statistical model represents aggregately the processes of emission and diffusion of pollutants. The approximations of these emissions and diffusions were used to determine the relationship and interaction of urban parameters and their importance in explaining air quality. The authors conclude that their study began to show certain relationships but additional in-depth studies should be carried out to understand more fully the diffusion of air pollution emissions.

129

Wolozin, Harold (ed.). The Economics of Air Pollution: A Symposium. New York: W. W. Norton & Company, 1966.

The economics of air pollution in the areas of control, research, and policy is the thrust of the papers contained in this reader. The papers make clear that the economic aspects of air pollution cannot be separated from social, political, and psychological aspects. The contributors to the book come from numerous disciplines and range from theorists to practitioners engaged by governments, universities, and the research institutes. Thus, the reader is able to review a spectrum of approaches relating to the economics of the air pollution problem in one book. A very useful paperback.

200 Government Documents - Federal

201

Abatement and Control Development Programs. A Compilation of Selected Air Pollution Emission Control Regulations and Ordinances. Washington, D.C.: U. S. Public Health Service, 1968.

Title is self-explanatory.

202

Cohen, A. S. et al. Long Range Planning in Air Resource Management. (Illinois: Argonne National Laboratory) Springfield, Virginia: National Technical Information Service, 1971.

The Chicago Air Pollution Systems Analysis Program goes through a long-range planning phase in which air resource management plays an integral part of the land-use planning. The land-use plans are reflected by local zoning ordinances and a model for projecting and displaying future air pollution levels is formulated. Social, economic, and administrative factors in the development of pollution control programs are discussed.

(Air Pollution Abstracts, modified)

203

Crocker, Thomas D. Urban Air Pollution Damage Functions: Theory and Measurement. (Riverside, California: University of California, 1970.) Springfield, Virginia: National Technical Information Service, No. PB 197663.

An investigation of the urban air pollution damage function as it is registered by differential market prices of residential property. By using somewhat complex specifications and data, the sensitivity of damage functions was ascertained and studied to see whether this approach would give more reliable data than simpler less costly methods. The results indicate little if any gain in data reliability by using expensive, complex analysis when compared to sound, less costly, simpler approaches.

204

DeMarco, Jack, et al. Incinerator Guidelines - 1969. Washington, D.C.: U. S. Government Printing Office, 1969.

The problem of water vapor plumes from solid waste incinerators is covered as well as the various methods of control available to achieve desired emission levels.

205

Duprey, R. L. Compilation of Air Pollutant Emission Factors.
Raleigh, North Carolina: U. S. Public Health Service, 1968.

This work is basically an index of the amount and type of air pollution generated by various industrial activities. To determine the air pollution level for a community these noted emissions would be used in concert with an emission inventory to develop an "emission factor" or statistical average of the rate at which pollutants are emitted.

206

Environmental Policy Division, Legislative Reference Service,
Library of Congress. The Economy, Energy, and the Environment.
Washington, D.C.: U. S. Government Printing Office, 1970.

A section of this report concerns itself with the environmental effects of generating electricity. The problem of the water vapor released by an evaporative cooling tower is noted along with the fact that chemicals added to the water to inhibit biological fouling resulting from corrosion or structural deterioration and minerals are also in the water droplets. This vapor sometimes forms mists, fog, or, in cold weather, ice. An alternative to this mechanical cooling tower is a natural draft tower, which may rise 30 stories above the ground and be a block in diameter. Airborne wastes from electrical power plants and their problems are also discussed.

207

Hickman, H. Lanier, Jr. "The Challenge that the National Survey Presents," An Interim Report-1968 National Survey of Community Solid Waste Practices. Washington, D.C.: U. S. Government Printing Office, 1968.

Mr. Hickman reviews the many problems of controlling air pollutants from solid waste incinerators and concludes that the pollution can be greatly reduced if not eliminated by using modern physical control equipment and considering the meteorological characteristics of the area.

208

LeSourd, D. A., et al. Comprehensive Study of Specified Air Pollution Sources to Assess the Economic Effects of Air Quality Standards. (Durham, North Carolina: Research Triangle Institute, 1970.) Springfield, Virginia: National Technical Information Service, No. PB 197647.

Estimates were made of the costs of controlling and reducing the emissions of certain air pollutants from mobile sources within the nation and other air pollutants from 23 stationary sources within 298 metropolitan areas. Under an assumed implementation plan, these estimated costs are those that would be incurred from Fiscal Year 1971 through Fiscal Year 1976. In addition, an extended analysis was made to determine the economic impact of control costs on each industrial source studied and the related effects upon buyer industries and consumer prices. The emission standards applied were stringent when compared with many currently in use throughout the nation.

209

Mason, David V. Atlanta Air Pollutant Emission Inventory. Durham, North Carolina: U. S. Public Health Service, 1969.

An inventory of air pollutants by type, source, season of the year, and geographical distribution within the area. The procedure used for this survey was based on the rapid survey technique. The study estimated that 650 thousand tons of the five pollutants analyzed were emitted annually in the study area.

210

Middleton, John T. et al. "Control of Environment--Economic and Technological Prospects," Environmental Improvement (Air, Water, and Soil), Ralph W. Marquis (ed.). Washington, D.C.: U. S. Department of Agriculture, 1966.

Examples of land, water, and air pollution are reviewed, and economic and technological prospects for restoring the quality of those resources as well as the suitability of legislation to achieve the needed control are assessed. Local government bodies should yield to higher or multi-government control bodies, since it is inimical to resource management that the quality of the environment be upheld primarily at the expense of the polluter and not at the expense of the general public. We must find a way to assess the social costs of pollution and to decide how much benefit would come from various ways of reducing those costs. Present systems are not adequate.

(Air Pollution Abstracts, modified)

211

Morita, Clyde B. Phoenix-Tucson Metropolitan Area Air Pollutant Emission Inventory. Durham, North Carolina: U. S. Public Health Service, 1969.

This report provides estimates of total emissions of oxides of sulfur, oxides of nitrogen, hydrocarbons, carbon monoxide, and particulate matter; plus their source type, seasonal emission, and geographical distribution within the area. The general procedure for these surveys is based on the rapid survey technique.

212

Ott, Wayne, John F. Clarke, and Guntis Ozolins. Calculating Future Carbon Monoxide Emissions and Concentrations from Urban Traffic Data. Cincinnati, Ohio: U. S. Public Health Service, 1967.

An urban area approach for calculating carbon monoxide emissions and concentrations using urban traffic data and meteorological diffusion models was applied to several urban areas both to see whether the technique was feasible and to see how changing traffic patterns affect future emission levels. With no emission control it was found that in 21 years the amount of carbon monoxide emitted would double and that regions with the highest densities tend to enlarge in area.

213

Ozolins, Guntis and Raymond Smith. A Rapid Survey Technique for Estimating Community Air Pollution Emissions. Cincinnati, Ohio: U. S. Public Health Service, 1966.

By collecting information on the amount of fuel consumed by stationary users and mobile users as well as refuse combustion sources, a method is presented which estimates the major emissions of air pollutants in a community. The method is based on data readily available and does not require extensive surveys and sampling procedures but provides reasonably accurate data on emission levels. This approach is not meant to replace in-depth, detailed surveys and analyses.

214

Peterson, James T. The Climate of Cities: A Survey of Recent Literature. Washington, D.C.: U. S. Government Printing Office, 1969.

This pamphlet notes that the climate of a city differs from that of the rural areas surrounding it, and an increasing amount of scientific research is devoted to comparative studies of urban and rural climates. The report is a survey of the literature of city climatology. Those meteorological aspects of urban climate that have been most frequently investigated are discussed and include: temperature, humidity, visibility, radiation, wind, and precipitation.

215

Public Health Service. A Digest of State Air Pollution Laws-1967 Edition. Washington, D.C.: U. S. Government Printing Office, 1967.

A review of all state laws which are related to the control of air pollution including a general statement of each law, its enforcement mechanism, and its penalties. Tax incentives are noted if they exist.

216

Public Health Service. Guidelines for the Development of Air Quality Standards and Implementation Plans. Arlington, Virginia: U. S. Public Health Service, 1967.

Title is self-explanatory.

217

Public Health Service. Proceedings: The Third National Conference on Air Pollution. Washington, D.C.: U. S. Government Printing Office, 1966.

This book contains the papers and statements made by well over 50 people and should be of interest to any planner whether he is engaged in some aspect of air pollution control or not. The general relationships of these papers are to the following categories: motor vehicles, heat and power generation, industrial operations, solid waste disposal, state and interstate control programs, local or regional control programs, the role of the Federal Government in control, and the economic and social aspects of control.

218

Public Health Service. Report for Consultation on the Washington, D.C., National Capital Interstate Air Quality Control Region. (n.d.).

This report illustrates the items necessary for an area to be designated an air quality control region: The legal steps on the part of the state(s), the emission inventory procedure and results, the diffusion model procedure and results, and the necessary demographic data.

219

Public Health Service. Special Studies for Incinerators for the Government of the District of Columbia. Washington, D.C.: U. S. Government Printing Office, 1968.

Although this study is aimed primarily at solid waste disposal, it does present an evaluation of air pollution control equipment for refuse incineration.

220

Public Health Service. Symposium: Air Over Cities, SEC Technical Report A62-5. Cincinnati, Ohio: U. S. Public Health Service, 1961.

This symposium attempted to look at the problem of air pollution and cities from three different approaches. First, the sources of air pollution and their related chemistry and meteorological characteristics are reviewed. Next, the dispersion and disposition of air pollutants over cities are presented using various diffusion modeling techniques. And finally, the future needs of meteorological and air quality observations are noted.

221

Rehmann, C. R. Motor Vehicle Exhaust Emissions - Gary, Indiana. Durham, North Carolina: U. S. Public Health Service, 1968.

Three pollutants -- carbon monoxide, hydrocarbons, and nitrogen oxides -- comprised 99 percent of the total weight of exhaust emissions in the study area. The vehicle-mile average-speed approach was considered the most accurate method for estimating the emissions from motor vehicle exhausts.

222

Turner, D. B. Effects of Meteorologic Parameters on Transport and Diffusion. Cincinnati, Ohio: National Air Pollution Control Administration, (n.d.).

The air pollution cycle was considered to consist of three phases: the release of air pollutants at the source, the transport and diffusion in the atmosphere, and the reception of air pollutants by people, plants, animals, or inanimate objects. The influence of meteorology was at its greatest during the diffusion and transport phase.

223

Turner, D. B., and J. L. Dicke. Influence of Topography on Transport and Diffusion. Cincinnati, Ohio: National Air Pollution Control Administration, (n.d.).

In many cases the transport and diffusion of air pollutants is complicated by terrain features. Most large urban areas are located either in river valleys or on the shores of lakes or oceans. Both of these features alter meteorologic conditions.

224

Williams, J. D. and Norman G. Edmister. An Air Resource Management Plan for The Nashville Metropolitan Area. Cincinnati, Ohio: U. S. Public Health Service, 1965.

The report summarizes a number of the technical and scientific papers and uses them to develop new concepts as well as to unify new and old approaches to air pollution control in preparation of the air resource management program. Air quality goals and the means to achieve them are presented along with supporting data for relating air quality to control of emissions. This report has general use for program development and reference for areas other than Nashville, although it is now out of date.

225

Williams, J. D., et al. Air Pollutant Emissions Related to Land Area -- A Basis for a Preventive Air Pollution Control Program. Durham, North Carolina: U. S. Public Health Service, 1968.

Advances in technology have made it possible to establish zoning performance standards, which will prevent air-use land-use conflicts. In the past, such standards were based on source capability and were uniformly inadequate. Now, because of the ability to predict air pollution levels, standards that accomplish both preventive and control aims can be applied. Land area and use as studied for planning purposes also reflects the diffusion capability of the air in many places. An example of the output from a computerized diffusion model is discussed.

226

Williams, J. D., et al. Interstate Air Pollution Study: Phase II Project Report. Cincinnati, Ohio: U. S. Public Health Service, 1967.

The St. Louis-East St. Louis Metropolitan area air pollution study was divided into two phases. The first phase was primarily aimed at making decisions for the second phase project operation. The Phase II studies examined the problem of air pollution in considerable depth and was composed of the following sections.

- I. Introduction
- II. Air Pollutant Emission Inventory
- III. Air Quality Measurement
- IV. Odors-Results of Surveys
- V. Meteorology and Topography
- VI. Effects of Air Pollution
- VII. Opinion Surveys and Air Quality Statistical Relationships
- VIII. Proposal for an Air Resource Management Program.

This study is recommended for any agency about to begin an in-depth air pollution study. It might still be available from the Air Pollution Office of E.P.A.

300 Government Documents - Regional, State, Local, Foreign

301

Bay Area Air Pollution Control District. Air Pollution and the San Francisco Bay Air. San Francisco, California: Bay Area Air Pollution Control District, 1970.

This pamphlet discusses the air pollutants in the Bay Area, the creation of photochemical smog, and the importance of weather and topography. Next, the effects of air pollution in the form of economic, plant damage, and health aspects are examined.

302

Bower, Blair T. and W. R. Derrick Sewell. Selecting Strategies for Air-Quality Management. Ottawa, Canada: Department of Energy, Mines, and Resources, 1971.

This study describes a framework for examining the efficacy of a number of alternative strategies for air-quality management, ranging from the collection of information and the provision of funds to the regulation of effluent disposal. It notes that each strategy can be applied at various points in the production and consumption processes and that each may be reviewed in terms of various technical, economic, and institutional criteria.

303

Gabell, Katharine. Cleaning the Air: A Regional Challenge. Philadelphia, Pennsylvania: Penjerdel, 1963.

A focus on the problem of air pollution in the tri-state, eleven-county region of the Pennsylvania-New Jersey-Delaware Metropolitan Area. It notes the costs of air pollution, both economic and health, and the sources and transmission of the pollutants. The study reviews how air pollution can be controlled and abated and then calls for voluntary cooperation in the Penjerdel region to bring about a new approach to air management.

304

Mayor's Task Force on Air Pollution. Freedom to Breathe: Report of the Mayor's Task Force on Air Pollution in the City of New York. New York: Mayor's Task Force on Air Pollution, 1966.

This report presents the magnitude of the air pollution problem facing New York City and suggests fourteen elements to be included in a program to combat it. This study and its recommendations may be of use to cities or metropolitan areas about to examine their own air pollution problems.

305

New York City Environmental Protection Administration. Toward a Rational Power Policy: Reconciling Needs for Energy and Environmental Protection. New York City: New York City Environmental Protection Administration, 1971.

The issue of power plant siting and the accompanying social costs undergo an analysis toward the direction of developing an energy supply policy which will provide for essential needs while adequately protecting the environment and public health, and at the same time make the best use of limited resources.

(Air Pollution Abstracts, modified)

306

Northeastern Illinois Planning Commission. Managing the Air Resource in Northeastern Illinois: Technical Report No. 6. Chicago: Northeastern Illinois Planning Commission, 1967.

An attempt to evaluate the air pollution problems, both existing and potential, for the Northeastern Illinois Metropolitan Area and recommend measures for establishing and keeping an improved air quality. The sources and volumes of air pollution in the area are noted, the effects of air pollution in the categories of health, economic costs, and community aesthetics are categorized, and the transportation of air pollution as it relates to the pollutant, the meteorology, the ground surface form, and the height of the emission point is reviewed. The concern of the public, the search for possible solutions, and air quality in a comprehensive planning framework are topics examined. Finally, a recommended air resource management program is presented.

This study is quite comprehensive in its scope and could serve as a general outline for an agency about to undertake such an air pollution analysis. Since the date of this study, some gains have been made in the analytical techniques available for studying air pollution, such as diffusion modeling and economic costs analysis, which might enable newer studies to approach the problem in a slightly different manner.

400 Pamphlets

401

Edelson, Edward. The Battle for Clean Air. New York: Public Affairs Committee, 1967.

This elementary pamphlet reviews all the general characteristics of the air pollution problem -- sources, meteorological aspects, health effects, economic costs, and government's role. Finally, the implications of air pollution control and long-run planning are discussed.

402

Lemke, Eric E., et al. Profile of Air Pollution Control in Los Angeles County. Los Angeles, California: Air Pollution Control District, 1969.

A general guide to the air pollution control activities in the Los Angeles Basin. The air pollution control program administered by the Los Angeles County Air Pollution Control District prevents the emission of nearly 6,000 tons of air contaminants daily from stationary sources. In addition, because of control devices 2,300 tons of air contaminants are not emitted from motor vehicles. However, 13,500 tons of pollutants are still being emitted mainly because of the 4 million vehicles in the area.

403

Weistburg, Mel. Physician's Guide to Air Pollution. Chicago, Illinois: American Medical Association, 1968.

The title of this pamphlet indicates that it is for the physician and it does review the health effects related to adverse levels of air pollution, but most of the text is non-medical in nature and does a good job in defining air pollution, noting its sources, discussing air quality, and the control of air pollution. This pamphlet provides a good overview of the air pollution problem and would be useful to someone wanting a general knowledge of the subject.

404

World Health Organization. Urban Air Pollution with Particular Reference to Motor Vehicles, Technical Report No. 410. Geneva, Switzerland: World Health Organization, 1969.

The collective view of an international group of experts is that virtually all urban areas in the world suffer from the air pollution of the internal combustion engine. The study reviews the effects of air pollution on health and methods of control as well as air quality criteria, guides, and standards. The report calls for more research into the effects of air pollution. It concludes that by the use of urban planning models which incorporate meteorological dispersion factors, future growth patterns should be those which make the best use of air resources in large urban areas.

500 Professional Journal and Magazine Articles

501

American Society of Planning Officials. "Air Pollution,"
Zoning Digest. 19, No. 6 (1967).

It was not necessary for the Department of Health to make a direct test to determine whether the air was being polluted. It was sufficient to apply guides based upon expertise and literature in the field to the known physical facts of the particular industrial process.

Shahmoon Industries, Inc. v. Department of Health,
Superior Court of New Jersey, Appellate Division (intermediate), December 12, 1966, 225 A.2d 699.

502

American Society of Planning Officials. "Air Pollution,"
Zoning Digest. 19, No. 10 (October, 1967).

The plaintiff applied for a special permit to construct a ready-mix plant in a heavy industrial district in the Town of Bethlehem. The board of appeals denied the permit on the grounds "that there presently existed a sufficient number of ready-mix supply plants, that an air pollution problem would be created, and the petitioner's motorized equipment would increase traffic congestion." The plaintiff appealed, and the court said that while no single reason given by the board would be adequate grounds for denial of permit the combination of reasons justified the decision.

Colonial Sand & Stone Co., Inc. v. Johnston, Supreme Court of New York, Appellate Division, Third Department (intermediate court), June 28, 1967, 281 N.Y.S. 2d 398.

503

American Society of Planning Officials. "Air Pollution,"
Zoning Digest. 21 (March, 1969).

The New York City air pollution control law regulating incinerators and fuel-burning equipment in apartment buildings was held constitutional as reasonably related to evil to be corrected despite the fact that such buildings accounted for less than one percent of pollutants from all sources. It is presently being appealed.

Oriental Boulevard Co. v. Heller, Supreme Court of Kings County (trial court), January 27, 1969, 297 N.Y.S. 2d 431.

504

American Society of Planning Officials. "Performance Standards," Zoning Digest. 16, No. 3 (March, 1964).

Air pollution regulations based on the Ringelmann Chart were held constitutional.

Sittner v. City of Seattle, Supreme Court of Washington, En Banc (highest court), August 29, 1963, 384 P.2d 859.

505

American Society of Planning Officials. "Performance Standards," Zoning Digest. 16, No. 11, Part 2 (December, 1964).

A special permit for an incinerator in a manufacturing zone was improperly granted. The applicant had submitted no evidence that the incinerator would comply with applicable performance standards.

Kosoglad v. Zoning Board of Appeals of City of Chicago, Appellate Court of Illinois, First District (intermediate court), March 18, 1964, 198 N.E. 2d 216.

506

Arhenback, P. R. "The City: A Challenge to Engineering and Political Sciences," American Society of Heating, Refrigeration, and Airconditioning Engineers Journal. 11, No. 3: 33-8 (March, 1969).

The problem of urban air pollution was discussed along with other environmental problems which may be reduceable by physical means employed by the several professions comprising this society. (APCA Abstracts, modified.)

507

Arnold, G., and E. Edgerley. "Urban Development in Air Pollution Basins: An Appeal to the Planners for Help," Journal of the Air Pollution Control Association. 17, No. 4: 235-7 (April, 1967).

The air basin between the Mississippi River and the bluff in Illinois is the interest of this report. Heavy pollution occurs near East St. Louis and Granite City on one morning out of four. Business interests would like to use the basin for industrial expansion, but air resource planners prefer to keep new air pollution sources out of this lowland. (APCA Abstracts, author's abstract modified.)

508

Berry, R. S. "The Chemistry and Costs of Contamination. Perspectives on Polluted Air - 1970," Bulletin of the Atomic Scientist. 26, No. 4: 38-41 (April, 1970).

The complexities of improving the environment are being recognized by more people. Sources of air pollution and methods of monitoring and controlling air pollutants are examined. The problems of pollution abatement are partly technological, partly economic, and partly political. The avenues available for achievement of the national goal of improved air are considered. One of the chief suggestions is the creation of strong, well-funded and highly directed task forces, akin to NASA, to solve specific technological problems of environmental management. (APCA Abstracts.)

509

Bump, Robert L. "The Use of Electrostatic Precipitators on Municipal Incinerators," Journal of the Air Pollution Control Association. 18: 803- 9 (December, 1968).

Because of the tremendous volume of solid waste generated daily, the author said that central incineration is the answer due to its maximum volume reduction. The major part of this article deals with the effective control of particulate emissions from municipal incinerator exhausts.

510

Bush, Albert F. "Urban Atmospheric Pollution," Civil Engineering. 66- 8 (May, 1965).

The author reviews the problem of air pollution from a highway engineer's viewpoint. He notes that freeways are line sources of pollution, yet they have been located with little or no consideration of the natural ventilation pattern and its ability to handle the pollution load. Even with new emission control devices, the increasing number of cars will cause pollution to increase. Therefore, new major roads must be placed where the atmosphere can handle the pollution produced.

511

Fensterstock, J. C., J. A. Kurtzweg, and G. Ozolins. "Reduction of Air Pollution Potential Through Environmental Planning," Journal of the Air Pollution Control Association. 21, No. 7: 395-9 (July, 1971).

Amelioration of the air pollution problem will depend primarily upon mechanical controls and fuel and process changes. Urban and transportation planning, however, may provide supplementary means for reducing both emissions of pollutants and the exposure of persons to undesirably high ambient concentrations. Three general areas are identified in which the policies, plans, and standards developed by environmental planners can influence the air pollution problem:

1. Long-term, large-scale urban planning involving entire or substantial parts of metropolitan areas.
2. Design and operation of transportation systems.
3. Location, design, and construction of individual roadways and structures.

512

Ferrand, E. "Urban Air," Science and Technology. No. 98: 8-16 (June, 1969).

The atmosphere is polluted by burning fuels, by waste incineration, and by discharge of gas and aerosol by-products from chemical processing, manufacturing, construction, and demolition. Air quality is strongly dependent on weather. A polluted atmosphere has serious effects upon man, his society, and his environment. The role of the Air Quality Act of 1967 is discussed. (APCA Abstracts, modified.)

513

Feuss, James V., and Franklin B. Flower. "Design of Apartment House Incinerators: State of the Art," Journal of the Air Pollution Control Association. 19: 142-8 (March, 1969).

The purpose of the authors is to organize information relating to the design of apartment house incinerators and their emission standards for the training of and use by local officials concerned with development and enforcement of air pollution codes. The differences and similarities among the many ordinances are illustrated and the reasons for the variations discussed.

514

George, Ralph E., Julien A. Verssen, and Robert L. Chass.

"Jet Aircraft: A Growing Pollution Source," Journal of the Air Pollution Control Association. 19: 847- 55 (November, 1969).

The primary interest of this study was to obtain complete, comprehensive information on the kinds and quantities of air contaminants emitted by jet aircraft and to investigate possible approaches to the control of jet aircraft pollution.

515

Havighurst, Clark C. (ed.). "Air Pollution Control," Law and Contemporary Problems. Durham, North Carolina: Duke University School of Law, 1968. 33, No. 2 (Spring, 1968).

This issue is devoted to air pollution control. The compilation includes papers relating to the health aspects of air pollution, control technology, economics, the Air Quality Act of 1967 and its deficiencies, control legislation, and air quality management legislation. Predates current legislation but still a useful document.

516

Jackson, W. E., H. C. Wohlers, and W. DeCoursey. "Determining the Costs of Air Pollution Control," Journal of the Air Pollution Control Association. 19:917- 23 (December, 1969).

A general approach is described which can be followed when estimating the cost of reducing air pollution emissions within a metropolitan region. The six-step procedure examined emission inventories, regional trends, control trends, alternate control schemes, control costs, and optimum cost-effectiveness.

517

Johnson, Kenneth L., L. H. Dworetzky, and Austin N. Heller.

"Carbon Monoxide and Air Pollution from Automobile Emissions in New York City," Science. 1960: 67- 8 (April 5, 1968).

The local business-day traffic determines the diurnal carbon monoxide concentrations at individual sites in Manhattan. Concentrations during the day can be predicted from readings taken in early morning.

518

Kaufmann, Dr. Werner. "Stuttgart Cleans Its Air," Landscape Architecture. 57, No. 3: 176-8 (April, 1967).

Stuttgart, Germany, because of its physical setting and prevailing winds, suffers from poor ventilation, often resulting in a dense blanket of air pollution over the city. In order to improve its microclimate, the many miniature valleys leading from the surrounding hills to the major valley are kept free of building which would hinder air circulation. In fact, in one of these miniature valleys, the city's long-range plan calls for the actual demolition of existing houses and other structures now contributing to the smog by disturbing the flow of air.

519

Krenz, William B., Janet E. Dickinson, and Robert L. Chass. "An Appraisal of Rule 66 of the Los Angeles County Air Pollution Control District," Journal of the Air Pollution Control Association. 18:743-7 (November, 1968).

Emissions of organic solvents to the atmosphere of Los Angeles County were estimated at 600 tons per day. In 1966, Rule 66 was enacted after more than a year of joint effort by industry and the Air Pollution Control District.

The article explains the provisions of the rule, describes its enforcement effects, and illustrates the methods used by industry to comply.

520

Kurker, Charles. "Reducing Emissions from Refuse Disposal," Journal of the Air Pollution Control Association. 19: 69-72 (February, 1969).

Of the many methods of solid waste disposal available and practiced, the sanitary landfill method of disposal or incineration combined with a sanitary landfill were the most satisfactory methods of disposal, and they eliminated the health hazards normally associated with poor waste disposal practices. This was the conclusion of a study of the disposal of solid wastes in Connecticut.

521

Leduc, Edgar C. "The Socio-Political Characteristics of Urban Governments Engaged in Air Pollution Control Activities," Journal of the Air Pollution Control Association. 18:733 - 7 (November, 1968).

The cities which have had air-pollution control activities for sometime were the central cities of metropolitan areas. The cities with more recent control activities had similar socio-economic characteristics to the old-program cities. The cities without air pollution activities were the suburbs and satellite cities. Other characteristics were also discussed.

522

Lieber, Harvey. "Controlling Metropolitan Pollution Through Regional Airsheds: Administrative Requirements and Political Problems," Journal of the Air Pollution Control Association. 18:36-93 (February, 1968).

This is an evaluation of the regional approach to controlling air pollution, in the light of the New York metropolitan experience, and recent Federal and state legislation. Regional airsheds are defined and their administrative advantages delineated. The political difficulties involved in establishing and managing regional control districts are discussed.

523

Lowry, William P. "The Climate of Cities," Scientific American, 217, No. 2: 15-23 (August, 1967).

Five variables affecting the local climate of the city and the country are presented, and the differences within each class of variables between the city and the country are used to explain the resulting characteristics of each local climate. The city's climate is warmer perhaps by as much as 10 to 15 degrees Fahrenheit. The city has a greater frequency of fog and often a reduced visual range. During periods without rain, the city consistently has about a 6 per cent lower relative humidity than the country while on a yearly basis the city receives 10 per cent more precipitation.

524

Mahoney, Louis E., Jr. "Wind Flow and Respiratory Mortality in Los Angeles," Architecture, Environment, and Health. 22, No. 3: 344-7 (March, 1971).

As a preliminary part of a study of Los Angeles air pollution, a model of daytime wind flow over Los Angeles was constructed. The city was divided into five wind zones representing distance downwind along the path of air flow. Death rates were computed for subsets of the city population. Mortality from respiratory disease was found to increase in successive downwind zones.

(Air Pollution Abstracts, modified)

525

- McKay, L. M. "Air Pollution Build-Up in Populated Areas -- A Method to Prevent," Rocky Mountain Medical Journal. 66, No. 3: 49-55 (March, 1969).

The atmospheric phenomena referred to as frontal and nighttime inversion, which now prevent the normal atmospheric dispersion mechanism to maintain effectively a clean air condition, would, in this method, become an ancillary force enhancing it. The contaminants would be collected at their source so that the spreading of the toxic material would be prevented. Valuable components deposited in storage tanks could be economically salvaged; urban sewage systems provide this method of control. Contaminated air enters a storm drain naturally and as a result of the venturi effect pulls more air down the sewer with it. Evacuating tubes containing exhaust fans may be installed in existing buildings to facilitate air movement into the sewers. After cleaning, this air is free to be redistributed above ground. (APCA Abstracts, modified.)

526

- McLaughlin, J. F., Jr. "Atmospheric Pollution Considerations Affecting the Ultimate Capacity of a Thermal-Electric Power Plant Site," Journal of the Air Pollution Control Association. 17:470- 3 (July, 1967).

The power plant designer today has the tools at hand to enable him to predict the effect of different stack heights on ground level concentrations of the gaseous pollutants emitted from power plant stacks. Use of tall stacks may make it possible in most cases to build larger power plants on any particular site than were in service and still operate them satisfactorily from the standpoint of air pollution. In some cases, however, atmospheric pollution considerations would make it necessary at some sites to put a finite limitation on the maximum height which could be installed.

527

- Middleton, John T. and Wayne Ott. "Air Pollution and Transportation," Traffic Quarterly. 23, No. 2: 175- 89 (April, 1968).

The automobile today is the most serious single cause of air pollution and contributes significantly to pollution levels over the urban area as a whole. As an intermediate step, the problem is being met through Federal standards that limit harmful emissions of various pollutants. However, when we reach a physical limit beyond which further reduction of pollution is impossible, we will have to look to alternatives to the internal combustion engine.

528

- Mosher, J. C., et al. "The Distribution of Contaminants in the Los Angeles Basin Resulting From Atmospheric Reactions and Transport," Journal of the Air Pollution Control Association. 20, No. 1: 35-42 (January, 1970).

Different techniques of data analysis are presented which have been successfully applied to Los Angeles County air monitoring to delineate major source areas of carbon monoxide, sulfur dioxide, nitrogen oxides, and ozone; to develop contaminant transport patterns; and to demonstrate the progress of photochemical reactions in the Los Angeles atmosphere.

(Air Pollution Abstracts, modified)

529

- Mukherji, Ahangjit. "Abatement of Atmospheric Pollution by Urban Planning," Traffic Quarterly. 23, No. 3: 433- 50 (July, 1968).

Mr. Mukherji describes the air pollution contributed by the motor vehicle in considerable detail and the role the automobile is playing in the urban scene today. He says that before the end of this century, some alternative to today's unrestricted use of the car will have to be imposed. He proposes a systems approach involving the setting of an acceptable limit by statutory planning for the density of motor vehicles in operation in urban areas. However, public transportation must be the major way to our cities, particularly the large ones and particularly during peak hours. Thus, public transportation should be stressed and private transportation curtailed.

530

- Nourse, Hugh O. "The Effects of Air Pollution on House Values," Land Economics. 43, No. 2 (May, 1967).

The author attempted to find out whether air pollution had any effect on residential property values. By studying the St. Louis Metropolitan Area and using regression analysis and testing for statistical levels of significance, he was able to show that housing values decreased by \$245 for every .5 milligram increase in the level of sulfur trioxide per 100 square centimeters.

531

- "Pollution Causes Climatic Changes," Mines Magazine. 60, No. 8: 11-3 (August, 1970).

Some examples of the effect of pollution on climate are presented. Industrial areas in which dust is a serious problem have reported substantial increases in rainfall when compared to areas less polluted. Changes in urban temperatures and the number of days of sunlight are some other effects noted. (APCA Abstracts, modified.)

532

"Rationale for Air Quality Criteria," Environmental Science and Technology. 2, No. 10: 742-9 (October, 1968).

Today we are lacking demonstrable adverse health effects attributable to air pollution. This article notes the different modes of air pollution to which man is exposed and the problems of emission control. It then discusses the cause-effect difficulty of determining air pollution and illness; however, the article does note the possible effects resulting from childhood exposure, urban life exposure, and diseases requiring a cofactor, such as smoking. The article concludes that based on the philosophy of preventive medicine air quality criteria must be established.

533

Robinette, G. "Plants as Air Conditioners," Horticulture. 46, No. 3: 26-9 (March, 1968).

Plants are known to emit oxygen, consume carbon dioxide, as well as "eat" dust. They remove airborne impurities by dilution, precipitation or filtration, narcosis, air washing, oxidation, and reodorization or masking. Thus, plants can be considered among the most effective air conditioners in existence. The author mentions potential utilization of these properties, for example, planting a half-mile green belt on either side of highways or planting fragrant plants near sources of disagreeable odors. (APCA Abstracts)

534

Rowe, D. R. and L. W. Canter. "Air Pollution: Causes, Effects and Resolution," Public Works. 101, No. 10: S6-7 (October, 1970).

This article describes how air pollutants are classified, the role of meteorological variables; the effects of air pollution, and what steps should be taken to control air pollution. Specifically, the control of air pollution will come only from pressure exerted by individuals in government and industry to apply existing technology to control the problem.

535

Ruckelshaus, William D. "Will Air Pollution Regulations Change Commuting Patterns," Civil Engineering. S6-7, (September, 1970).

By 1976, Federal standards will require that automobile exhaust gases have only one-tenth the emissions permitted in the 1970-model cars. In addition, to meet Federal air quality standards, some urbanized states will have to do more. Among the possibilities are: traffic engineering improvements, variations in work hours, requiring commercial vehicles to burn special low-pollution fuels, fringe parking, and express buses. Land use planning may also play a long-term role.

536

Rydell, C. Peter and Gretchen Schwarz. "Air Pollution and Urban Form: A Review of Current Literature," Journal of the American Institute of Planners. 34, No. 2: 115-20 (March, 1968).

Today evidence is mounting to show that the urban air pollution problem is the result not only of smoke stacks and automobiles but also of the overall spatial and temporal location of these urban forms. After an air pollutant is released into the atmosphere, its dispersion and transportation is determined by the urban microclimate. Thus, to control our urban air pollution, we must first understand our microclimate and how the various urban activities are related to it. Then by controlling these activities and establishing air quality criteria, we can control the purity of the air we breathe. A large number of references are reviewed.

537

Rydell, C. Peter and Benjamin H. Stevens. "Air Pollution and the Shape of Urban Areas," Journal of the American Institute of Planners. 34, No. 1: 50-1 (January, 1968).

Air pollution appears to be a more difficult problem to solve than water or land pollution. A major source of air pollution, the automobile, has had technological improvements made on it which partially reduce its air pollution contribution. However, because of the increase in the number of automobiles in some urban areas, these technological advances may be outpaced. Therefore, an optimal urban form which minimizes the total vehicle miles of automobile travel and total air pollution caused by exhaust fumes may be a long-run method of controlling air pollution.

538

Schneiderman, Michael, Cal K. Cohn, and Glenn Paulson. "Air Pollution and Urban Freeways: Making a Record on Hazards to Health and Property," The Catholic University Law Review. 20, No. 1: 5-18 (Fall, 1970).

The exhaust emissions produced by vehicles traveling urban freeways can have substantial and serious effects on human health, but the possibility of such harm is virtually ignored in highway location studies today. Basic data telling the air pollution story is never assembled. Instead, highway planners rely on incomplete and unsophisticated generalizations.

539

Smith, William H. "Trees in the City," Journal of the American Institute of Planners. 36, No. 6: 429-36 (November, 1970).

This technical review article discusses available evidence concerning the capacity of trees to influence noise, air pollution, micro-climate, and water supply. The ability of plants to subtract meaningful amounts of air pollutants from the atmosphere remains unsolved. Trees possess the capacity to intercept and hold certain aerosols; however, whether or not this subtraction results in a significant improvement in air quality is not known. The ability of trees to absorb gaseous pollutants is established, but it is not clear whether this absorption appreciably lessens the concentration of any polluting gas prior to the point at which the absorbing tree is injured.

540

"Urban Ecology and the Air Environment - Plenary Session Summary," Journal of the Air Pollution Control Association. 19:836-46 (November, 1969).

This theme expressed in the article's title was the feature of the 62nd annual meeting of the Air Pollution Control Association held in 1969. Mr. Austin N. Heller discussed "The Role of the Urban Air Resource Manager." Mr. Aaron J. Feller talked on "The Social Adequacy of Technology." Mr. Barry Commoner reviewed "The Crisis in the Environment." And Mr. Stewart L. Udall spoke on "A Values Revolution and Environmental Humanism."

541

Waggoner, Paul E. "Plants and Polluted Air," Bioscience. 21, No. 10: 455-9 (May 15, 1971).

Chemical protection of plants from ozone and air cleansing by foliage are discussed. By simulating and calculating the cleansing of polluted air by foliage, a comparison of the possible change in ozone concentration between the air over Los Angeles and an area 75 kilometers downwind indicate that foliage could cause a considerable difference in lowering the downwind values of ozone. This suggests that vegetation which survives pollution could have an important role in improving the environment.

(Air Pollution Abstracts, modified)

542

Wilson, Richard D. and David W. Minnotte. "A Cost-Benefit Approach to Air Pollution Control," Journal of the Air Pollution Control Association. 19, No. 5: 303- 8 (May, 1969).

Cost-benefit analysis is one possible way of establishing an acceptable level of air pollution in a community -- provided that the pollution level indicated is below the level at which serious health effects have been shown to occur. This study was only an illustrative analysis and considers only particulate pollution. However, with further research and testing this approach may be a feasible method for setting acceptable levels of air pollution. Some regulation problems were inherent in approach.

543

Wisely, F. E., G. Wayne Sutterfield, and David L. Klumb. "St. Louis Power Plant to Burn City Refuse," Civil Engineering, 41, No. 1: 56-9 (January, 1971).

A process for disposing of domestic solid waste is described by which refuse is utilized as supplementary fuel for large power plant boilers. Refuse is low in sulfur, and its use as fuel could reduce sulfur oxide emissions as well as eliminate the particulates from the chimneys of conventional incinerators.

(Air Pollution Abstracts, modified)

544

Yocum, John E., George F. Collins, and Norman E. Brown. "Economics of Pollution Control: Plant Site Selection," Chemical Engineering. Deskbook Issue, pp. 164-8 (June 21, 1971).

Environmental impact studies will play an increasingly important role in the economic planning of new industrial expansion. Available mathematical models provide useful tools for predicting the physical impact on the environment from waste heat disposal or the emission of air and water pollutants.

600 Unpublished Materials - Papers, Reports

601

Baker, William G. "A Study of the Relationship Between Emission Rates for Selected Air Pollutants and Population," (paper presented at Mid-Atlantic States Section Semi-Annual Technical Conference on The Legal Road to Cleaner Air held in Wilmington, Delaware on April 26, 1968). Pittsburgh, Pennsylvania: Air Pollution Control Association, 1968.

The conclusion reached by the author was that with the exception of particulate matter published emission rates do correlate in a linear manner with population.

602

Bellomo, Salvatore, Jr., and Edward Edgerley, Jr. "Ways to Reduce Air Pollution Through Planning Design and Operations," (paper presented at 50th Annual Meeting of Highway Research Board).

A series of case studies which illustrate how air pollution emissions and concentrations can be reduced through proper planning, design, and operation of transportation systems and urban development. These studies indicate ways in which air pollution might be reduced in addition to the legislated air pollution controls on vehicles and stationary source emissions.

603

Bernatsky, A. "The Importance of Protective Plantings Against Air Pollutants," (paper presented at First European Congress on the Influence of Air Pollution to Plants and Animals held in Wageningen, Netherlands, in 1968, translated from German).

Forest belts do not solve the problems of air pollution but when properly planned will facilitate the reduction of air pollutants. Though generally ineffective in the case of sulphur dioxide, pollution-resistant species reduce atmospheric concentrations of dust and of solid and gaseous radioactive substances. In addition, they reduce noise, prevent binding of SO₂, and increase the relative humidity of air. Solid particles can be filtered from the atmosphere by planting open stands of trees or shrubs. Dense stands are needed for gaseous pollutants. In protective plantings, the longitudinal axes have to run across the prevailing wind direction. In areas without wind, e.g., towns, hot air ascends and relatively cold air pours in from all sides, leading to the accumulation of polluted air in the center that has to be filtered by concentric plantings. The closer the forest strips to the source of smoke, the greater their effectiveness. (Air Pollution Abstracts, author's abstract modified.)

604

Berve, Raghilt. "Air Purification, Objective Pursued by Physical Planning in Relation to Urban Agglomerations-Example: The Ruhr," (paper presented at the Second International Clean Air Congress held in Washington, D.C., from December 6-11, 1970).

Regional development policy must take into consideration the air pollution of an area. It may be stated generally, and this applies to all European high-density industrial areas, that their economic strength can be regarded as secure only in so far as they will prove capable of providing attractive environmental conditions, such as clear air. The regional plan covering the organization of space will by itself be unable to resolve the conflicts arising from the different uses of space in dense urban areas. (Air Pollution Abstracts, author's abstract modified.)

605

Burns, Leland S. Urban Planning Aspects of Air Pollution Abatement. Berkeley, California: University of California, 1970.

People from all parts of the urban scene have been increasingly looking to the planners for proposals for the abatement of many problems, including air pollution. Regional applications of site selection, wind effects, and air flow patterns have been considered in the architectural and planning aspects. Environmental planners are considering various density levels for an urban area and what these levels imply about pollution. Recommendations for physical planning research include regional modeling, indicators, air basin capacity, effect of city size and population density, and the habitat. Proposals for policy planning research include the search for effective institutional frameworks, monitoring and control functions, jurisdiction, levels of acceptable air pollution, and points of intervention. (Air Pollution Abstracts, modified.)

606

Burton, Ellison S., Samuel R. Peterken, and William Sanjour.

"A Cost Effectiveness Approach to Urban Air Pollution Abatement," (paper presented at the 1968 Joint National Meeting of the Operations Research Society of America and the Institute of Management Sciences held in San Francisco on May 3, 1968).

Urban air pollution is a complex phenomenon involving the interaction of area meteorology with hundreds of sources of pollutant emissions. In general, a source emits several pollutants, and there can be many technical alternatives for control of each pollutant. The cost of these alternatives varies depending on size and efficiency in the use of hardware and on usage and availability in the case of fuels. The achievement of air quality goals for the area can be stated in terms of pollutant emissions, ambient air concentrations, or measures of exposure. A practical computerized model is described which determines the source-by-source costs for achieving stated air quality goals under different constrained-cost strategies. Applications of the model to both hypothetical and real cities are summarized.

607

Burton, Ellison S. and William Sanjour. "Evaluating the Efficiency of Urban Air Pollution Abatement Strategies." (paper presented at 15th International Meeting of The Institute of Management Sciences, held in Cleveland, Ohio on September 12, 1968).

A simulation approach is discussed which permits the cost and effectiveness of strategies for urban air pollution abatement to be examined in great detail. This approach was applied to both hypothetical and real cities (Kansas City, Kansas; Missouri; and Washington, D.C.) to evaluate the impact of strategies for controlling sulfur dioxide and particulate pollution. The primary basis for evaluation is the least-cost strategy for achieving the same air quality level as a candidate strategy with respect to these two pollutants, thus allowing the economic efficiency of the strategy to be evaluated. On this basis, several urban abatement strategies are examined for efficiency in the cases of Kansas City and Washington.

608

Cross, Frank L., Jr. Community Air Pollution Protection Using Buffer Zones. (n.d.).

The use of buffer zones is an aspect of air pollution control, which, according to the author, has received very little specific attention but has been talked about considerably. In areas in which there is still a large amount of land developable, this concept could be considered a control mechanism. In addition, a buffer zone allows for future regulation of air pollution with control devices.

609

Cross, F., and J. Dicke. Air Quality Management Strategy Through the Use of a Diffusion Model. (n.d.).

By the use of diffusion modeling and other advanced concepts, the quality of air can be managed within an airshed. The article reviews several models and related aspects of air quality management.

610

Croke, E. J. and J. J. Roberts. "Air Resource Management and Regional Planning." Argonne, Illinois: Argonne National Laboratory, (n.d.).

Smoke abatement traditionally has relied on chimney watchers and equipment inspectors. While this kind of surveillance is necessary, it usually indicates a control strategy which is vague and unevenly applied. An alternative is air pollution control based on well-defined emission rights for each parcel of land in a region.

611

Croke, Edward J., Kevin G. Croke, and Allen S. Kennedy. "Integrating Air Resource Management with Urban and Regional Planning," (paper presented at 64th Annual Meeting of the Air Pollution Control Association held in Atlantic City, New Jersey, on June 27-July 1, 1971). Argonne, Illinois: Argonne National Laboratory, 1971.

No regional model is comprehensive enough to represent all of the urban and regional growth processes, although considerable work has been done on many of the necessary components of such a model. The first part of this paper reports on some of the sub-parts to be integrated into this model. The second section of the paper shows how such models can be used in air resource management planning. The final section describes the development and testing of the pilot version of a computerized air resource management plan evaluation system based on land use and designed to interface between conventional air pollution control planning and regional planning. Parametric analyses conducted with the pilot version of the planning system indicate that land use control is a feasible method of maintaining air quality standards once they are achieved.

612

Ernst & Ernst. "A Cost-Effectiveness Study of Air Pollution Abatement in the Greater Kansas City Area," (paper presented at Air Pollution Abatement Conference held in Kansas City in May, 1968).

The estimated cost of achieving different air quality levels in the Kansas City Study Area under different abatement strategies is reviewed.

613

Fay, James A. Air Pollution from Future Giant Jetports.
Cambridge, Massachusetts: Massachusetts Institute of
Technology, 1970.

The planned expansion of major airports could lead to a new type of air pollution problem. The pollutants emitted by aircraft during landing, taxiing, and take-off will cause higher ambient air levels than is now encountered at existing airports. Because aircraft arrive and depart in a generally upwind direction, the pollutants are deposited in a narrow corridor extending downwind of the airport. Vertical mixing in the turbulent atmosphere will not dilute such a trail since the pollutants are distributed vertically during the landing and take-off operations. As a consequence, airport pollution may persist twenty to forty miles downwind without much attenuation. (Air Pollution Abstracts, modified.)

614

Goodrich, John C. "Technical Working Paper on Methods for Determining Air Pollution from Planning Variables."
Lexington, Massachusetts: Environmental Research and
Technology, Inc., 1971.

This paper addresses itself to a discussion of a method for determining levels of air quality directly from readily available land use and transportation planning data. The steps in the procedure are presented and the types of data necessary for an air pollution study are discussed.

615

Hauser, Edwin W., Leonard B. West, and A. Richard Schleicher.
"Some Fundamental Air Pollution Considerations For Urban
and Transportation Planners," (paper presented at 1970 AIP
"Confer-In" at Minneapolis, Minnesota). Durham, North
Carolina: Research Triangle Institute, 1970.

This paper presents an overview of some air pollution concepts that should be of interest and concern to anyone associated with urban and transportation planning. It places special emphasis on air pollution consideration for those planners and engineers engaged in long-range planning, urban design, new-town planning, policy planning, education planning, transportation planning, and transportation engineering activities.

616

Institute of Public Administration. Governmental Approaches to Air Pollution Control: A Compendium and Annotated Bibliography. (Environmental Protection Agency Contract Number EHS 70-126). Washington, D.C.: Institute of Public Administration, 1971.

This report presents an excellent picture of the problem of air quality management today and the advantages and disadvantages of the various methods of improving air quality. The report notes: the Federal legislative role to date in the field of air pollution control, the usual ineffectiveness of voluntary compliance by the private sector to reduce air pollution, the role played by emission standards, ways land use controls can control air pollution, private legal action which may be used to combat pollution, various economic methods of control (cost sharing, incentives, and emission charges), attempts at air pollution abroad, and finally, the problems of developing criteria for evaluating air pollution control.

617

Kurtzweg, Jerry A. Land Use Planning and Air Pollution Control in The Puget Sound Region. Washington: Published by King County Planning Department, Puget Sound Governmental Conference and Puget Sound Air Pollution Control Agency, 1967.

Traditionally, zoning has been used to reduce the effects of air pollution by locating land uses of similar nuisance potential in the same geographic area and by separating uses of high potential from those of low potential. Recent air resource management plans propose zoning be used in conjunction with emission standards to achieve a pattern of emission densities which will not create ambient pollutant concentrations exceeding community air quality goals. If land use-air use conflicts are to be avoided and land use planning and regulation are to serve as useful supplements to air pollution regulations, regional considerations will have to be introduced into municipal and county land use planning and zoning activities.

618

Kurtzweg, J. A., and D. W. Weig. "Determining Air Pollutant Emissions from Transportation Systems." Durham, North Carolina: U. S. Public Health Service, 1969. (paper presented at the Symposium sponsored by the Association for Computing Machinery, held in New York City on October 24, 1969).

There are five major air pollutants emitted by the automobile. Since vehicular pollution is basically a problem of urbanizing, analysis of its source must be carried out on a metropolitan or smaller scale. A method is presented for estimating the quantity and distribution of motor vehicle emissions from established speed-emission relationships and transportation study dates. Thus, the calculated vehicular emissions and estimated emissions from non-vehicular sources can be used with a meteorological diffusion model to predict future air quality.

619

Kurtzweg, J. A. and D. W. Weig. The Determination of Air Pollutant Emissions from Transportation Systems. Environmental Protection Administration, (n.d.).

Internal combustion engine vehicles are a source of five major air pollutants: carbon monoxide, hydrocarbons, nitrogen oxides, particulates, and sulfur oxides. Because vehicular pollution is essentially a problem of urbanization, analysis of its source must be conducted on a metropolitan or smaller scale. A method is described in this report for estimating the quantity and spatial distribution of motor vehicle emissions in a metropolitan area.

620

Land Use Planning, Air Pollution Control. N.A.P.C.A. Grant 69C-110RE, 1970.

This study was undertaken to translate ecological principles into current and projected land-use planning. Urbanization and the effects of great per capita consumption upon the environmental conditions of Hillsborough County, Florida, were discussed. A section of the report included a review of the social and political climate and the decision-making factors which exist within the County. A detailed analysis of the climatology of the area was presented. (Air Pollution Abstracts, modified.)

621

Larsen, Ralph I. Air Pollution From Motor Vehicles. New York: New York Academy of Sciences, 1966.

Motor vehicles are a major source of urban air pollution. Indications are that a 95 percent reduction in emissions from new cars sold in the United States may be needed by 1975. This is suggested as a research goal for automobile manufacturers.

622

Larsen, Ralph I. "Determining Reduced-Emission Goals Needed to Achieve Air Quality Goals - A Hypothetical Case," (paper presented at Annual Meeting of Air Pollution Control Association, in Cleveland, Ohio on June 15, 1967). Cincinnati, Ohio: U. S. Public Health Service, 1967.

The steps involved in determining reduced-emission goals in air management were noted, and examples are cited of the various decisions and actions involved in determining a set of reduced-emission goals for stationary and mobile combustion sources.

623

Larsen, Ralph I. "Determining Source Reduction Needed to Meet Air Quality Standards," (paper presented at International Clean Air Congress, London, October, 1966). London, England: National Society for Clean Air, 1966.

Air pollutant concentrations can be expressed as a function of location, averaging time, and frequency by which a certain concentration is exceeded. Concentration data can be used with air quality standards to calculate the overall source reduction needed to meet a standard now and in the future.

624

Larsen, Ralph I., Ph.D. "How Computers Aid Air Management," (paper presented at Spring Technical Meeting of Mid-Atlantic States Section of Air Pollution Control Association, held in New York City on April 20, 1967). Cincinnati, Ohio: U. S. Public Health Service, 1967.

The data system unit operations were described and examples were used to illustrate how these unit operations have been combined into operating systems to aid in air quality management.

625

Love, Lester B. "A Benefit-Cost Analysis of Air Pollution Abatement," (paper presented at the 1971 Intersociety Energy Conversion Engineering Conference). New York, New York: Society of Automotive Engineers, Inc., 1971.

A decision to abate pollution involves a substantial commitment of society's resources. Benefit-cost analysis provides a systematic framework within which to estimate the cost to society of committing these resources to abatement and the benefit to society. A benefit-cost framework for air pollution abatement is set out and some of the difficulties in estimating costs and benefits are given along with some rough estimates of various categories of benefits and costs.

626

Ludwig, F. L., and J.H.S. Kealoha. Urban Climatological Studies. (Final Report.) Menlo Park, California: Stanford Research Institute, 1968.

A research program was undertaken in which the effects of urbanization on the distribution of temperature and humidity were studied. It was found that nighttime urban effects on the temperature field were generally more pronounced than daytime effects and certainly more closely related to other meteorological factors. (APCA Abstracts, modified.)

627

McCurdy, Thomas Richard. "Vehicular Emissions and the Location of Highways in Urban Areas," (professional paper in Regional Planning for the Pennsylvania State University Graduate School, 1969).

A discussion of the emission levels in traffic, the health effects, the future air pollution outlook, and traffic corridor planning. Of these, the last one is of particular interest to planners because it investigates the techniques available for minimizing the effects of traffic pollution. Some of the techniques are most relevant to the highway engineer, while some are more within the physical planner's domain.

628

McMullen, Thomas B., et al. "Air Quality and Characteristic Community Parameters," (paper presented at 60th Annual Meeting of Air Pollution Control Association, held in Cleveland, Ohio in June, 1967).

Statistical correlations between all parts of 16 selected air quality measurements and 13 selected community parameters for 66 standard metropolitan statistical areas were calculated, tested for significance, and reviewed for meaningful relationships. The most outstanding correlation in the entire set is between gasoline sales and population. No matter what else the urbanite may do, he drives a car.

629

Middleton, John T., et al. "Damage to Vegetation from Polluted Atmospheres," (paper presented at the 22nd Midyear Meeting of the American Petroleum Institute's Division of Refining held in Philadelphia, Pennsylvania on May 14, 1957).

Damage to vegetation from polluted atmospheres has been recognized for more than a century. Vegetation damage has increased with industrial development and urban development. Atmospheric contaminants responsible for damage to vegetation may be described as particulates -- such as dusts and acid aerosols -- and gases -- such as sulfur dioxide, halogens, oxidized organics, ozone, carbon monoxide, etc. Of these pollutants, gases generally cause more damage to plants than do particulates. The author then describes the damages done to certain plants by each pollutant.

630

Munn, R. E. "The Impact of Air Pollution on Property,"
(paper presented at the National Conference, Canadian Council
of Resource Ministers held in Montreal from October 31 to
November 4, 1966).

The physical mechanisms which contribute to weathering
in the absence or presence of pollution are described. The
weathering of materials is caused mainly by soiling, ero-
sion, and corrosion. Air pollution accelerates the deter-
ioration of most materials, but precise estimates of the
economic importance of the problem are lacking in Canada.
(APCA Abstracts, modified.)

631

Pelle, William J., Jr. "Integrating City and Regional Planning
with Air Pollution Control-Focus on the Northeastern Illinois
Metropolitan Area," (paper presented at 60th Annual Meeting
of the Air Pollution Control Association, held in Cleveland,
Ohio on June 11-16, 1967).

This paper develops insight into "planning-oriented"
measures for air pollution control. The Northeastern Illi-
nois Planning Commission's Air Resource Management Study
is used as a framework. Three major categories are dis-
cussed -- urban renewal, industrial land use planning, and
transportation planning. Attention is given to recommended
feed-in of air pollution information into prospective urban
renewal projects, rehabilitation areas, expressways, and
mass transit facilities; joint mandatory referral among
local agencies; zoning, buffer zones, and design specifics;
areawide warning system; and meteorological aspects of
regional planning.

632

Raphael, David L., and Ernest E. Enscoe, Jr. The Direct and
Indirect Economic Impact of Regional Air Pollution.
University Park, Pennsylvania: The Pennsylvania State
University, n.d.

Modern data processing and computer equipment made
possible the development of sophisticated and accurate
techniques for measuring the economic impact of air pollu-
tion. Using this equipment, this study developed a method
of estimating the economic impact of various types of air
pollution on a regional economy.

633

Rydell, C. Peter and Douglas Collins. "Air Pollution and Optimal Urban Form," (paper presented at 60th Annual Meeting of Air Pollution Control Association, held in Cleveland, Ohio on June 11-16, 1967).

Manipulating urban form is recognized as a strategy of air pollution control to be considered along with the traditional strategy of reducing pollutant emission. To illustrate the effect of air pollution considerations on optimal urban form, the influence of population density on automobile air pollution damage is analyzed. A decrease in population density is found to reduce air pollution damage in spite of the fact that with a given population a decrease in density causes automobile travel to increase. Spreading an urban area out under a larger air shed more than compensates for the increased amount of pollutant emitted. A simplified atmospheric diffusion model is used to calculate the relationship between density and pollution concentration. The model was constructed by a method of successive approximations. This approach facilitates analysis of urban form's effect on air pollution because the influence of urban form is radically different in each part of the model.

634

Salzenstein, Marvin A. "Industrial Performance Standards for Zoning," (paper prepared for the Training Workshop for City and County Planners held in New York City in 1969 from April 15-16, 1969).

The definition of performance standards and the approaches followed to establish them are explained. The problems of requiring certain plant design and the enforcement of quantifiable performance standards are discussed as well as possible roles for diffusion models.

635

Turner, D. B. Pollutant Concentration Variation. Cincinnati, Ohio: National Air Pollution Control Administration, (n.d.).

The author notes the importance of locational analysis of alternative land uses when considering stack emission diffusion for the diffusion is primarily a function of the stability of the atmosphere.

636

Van Arsodol, Maurice D., Jr. "Social Organization and Air Pollution." Paper No. 67-69. Los Angeles, California: University of Southern California, 1967.

The Los Angeles population is redistributing itself away from heavily affected air pollution sites as a consequence of normal metropolitan growth. The hazard of air pollution is apparently perceived in relation to the person's education and past experience with hazards. Metropolitan populations as a whole lack knowledge of how to deal with hazards, but individual action may be taken by moving away from air polluted sites.

637

Alan M. Voorhees and Associates, Inc. and Ryckman, Edgorley, Tomlinson, and Associates. A Five-Year Program to Incorporate Air Pollution Considerations in Urban and Transportation Planning. McLean, Virginia: Alan M. Voorhees and Associates, Inc., 1971.

This report was prepared by the firms noted above for the Environmental Protection Agency, Air Pollution Control Office. A review of the classification of pollutants, their effects, their classification, and estimates of emissions are presented. The authors note "that a combination of control technology and adequate urban and transportation planning will be necessary to achieve overall reductions in ambient air concentrations." To achieve this, the potential for reducing air pollution by urban and transportation planning is noted in the areas of density and land development patterns, spatial arrangements of buildings, planning of whole transportation systems, and by the design and operation of facilities. To identify the interrelationships involved, a work program is developed which calls for the identification of basic air pollution research which is pertinent, notes case studies to be completed, simulation studies to be developed, and demonstration projects to be carried out to analyze the effectiveness of this method of air pollution control.

638

Willis, Byron H., John C. Goodrich, and E. C. Reifenstein, III. "Incorporating Air Pollution Considerations into the Planning Process," (paper presented at 1971 Annual Conference of the American Institute of Planners held in San Francisco on October 24-28, 1971). Lexington, Massachusetts: Environmental Research and Technology, Inc., 1971.

A computer based tool is described which provides planners with the capability to evaluate the impact of alternative land use plans on ambient air quality levels.

639

Yocom, John E., William L. Clink, and William A. Cote.
"Indoor/Outdoor Air Quality Relationships," (paper presented at the 63rd Annual Meeting of Air Pollution Control Association, held in St. Louis, Missouri, on June 14-18, 1970).

Air quality data were gathered for suspended and coaling particulates, carbon monoxide and sulfur dioxide at two points inside and two points outside a pair of private homes, public buildings, and office buildings. In homes with gas heating and cooking, the heating system had no effect on CO levels while gas stoves did have a significant effect. Attached garages having a door opening from a garage directly to the house are also a significant source of outdoor CO. Suspended particulates readily penetrate private homes but can be removed by air conditioning systems. During the winter, SO₂ penetrates structures and diffuses into their interiors in varying degrees.

(Air Pollution Abstracts, modified)

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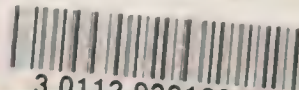
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